

## CLAIMS

- 1.- A recombinant antibody derived from the murine 14 F7 monoclonal antibody produced by the hybridoma with the deposit ECACC 98101901, characterized by the sequences of the hyper variable regions (CDRs) of the heavy and light chains shown below.
- 5 HEAVY CHAIN  
 CDR1: SYWIH  
 CDR2: YIDPATAYTESNQKFKD  
 CDR3: ESPRLRRGIYYYAMDY
- 10 LIGHT CHAIN  
 CDR1: RASQSSISNNLH  
 CDR2: YASQSSIS  
 CDR3: QQSNRWPLT
- 15 2.- The antibody according to claim 1 characterized by being a chimeric variant of the 14F7 antibody containing the CDRs and the framework regions (FRs) of the heavy and light chains of said 14F7 antibody and the constant region of the IgG1 human heavy chain and the constant region of the Ck human light chain with the following sequences of the framework regions (FRs) of the heavy and light chains:
- 20 HEAVY CHAIN  
 FR1: QVQLQQSGNELAKPGASMKMSCRASGYSFT  
 FR2: WLKQRPDQGLEWIG  
 FR3: KAILTADRSSNTAFMYLNSLTSEDSAVYYCAR  
 FR4: WGQGTTVTVSS
- 25 LIGHT CHAIN  
 FR1: DLVLTQSPATLSVTPGDSVSFSC  
 FR2: WYQQRTHESPRLLIK  
 FR3: GIPSRFSGSGSGTDFTLSIISVETEDFGMYFC  
 FR4: FGAGTKLELKRA
- 30 3.- An antibody according to claims 1 and 2 characterized by being a humanized variant of the 14F7 monoclonal antibody containing point mutations in the framework regions (FRs) of the heavy and light chains to reduce its immunogenicity.

4.- An antibody according to claim 3 characterized by being a humanized variant of the 14F7 monoclonal antibody whose framework regions of the heavy and light chains contain any of the following mutations:

HEAVY CHAIN:

- 5 Position 5: Q for V
- Position 9: N for A
- Position 11: L for V
- Position 12: A for V
- Position 18: M for V
- 10 Position 19: K for R
- Position 20: M for V
- Position 40: R for A
- Position 42: D for G

LIGHT CHAIN:

- 15 Position 39: R for K
- Position 40: T for P
- Position 41: H for G
- Position 42: E for Q

- 20 5. Single chain Fv fragment derived from the murine 14F7 monoclonal antibody produced by the hybridoma with the deposit number ECACC 98101901, characterized by containing the sequence of the variable region of the heavy chain of the murine 14F7 monoclonal antibody and a variable region of the light chain of a murine antibody.

- 25 6. Single chain Fv fragment according to claim 5, characterized because the variable region of the light chain is the 14 F7 antibody itself.

- 30 7. Single chain Fv fragment according to claim 6 characterized because the sequences of the hyper variable regions (CDRs) of the heavy and light chains are the ones shown below:

HEAVY CHAIN

CDR1: SYWIH

CDR2: YIDPATAYTESNQKFKD

CDR3: ESPRLRRGIYYYAMDY

## LIGHT CHAIN

CDR1: RASQSIENNHLH

CDR2: YASQSI

CDR3: QQSNRWPLT

5

8.- Single chain Fv fragment according to claim 7 characterized by containing the CDRs and the framework regions (FRs) of the heavy and light chains of said 14F7 antibody whose sequences of the framework regions (FRs) of the heavy and light chains are the following:

## 10 HEAVY CHAIN

FR1: QVQLQQSGNELAKPGASMKMSCRASGYSFT

FR2: WLKQRPDQGLEWIG

FR3: KAILTADRSSNTAFMYLNSLTSEDSAVYYCAR

FR4: WGQGTTVTVSS

## 15 LIGHT CHAIN

FR1: DLVLTQSPATLSVTPGDSVSFSC

FR2: WYQQRTHESPRLLIK

FR3: GIPSRFSGSGSGTDFTLSIISVETEDFGMYFC

FR4: FGAGTKLELKRA

20

9.- Single chain Fv fragment according to claim 8 which contains the point mutations of the framework regions (FRs) of the heavy and light chains to reduce its immunogenicity

10.- Single chain Fv fragment according to claim 9 whose framework regions of the heavy and light chains contain any of the following mutations:

25

## HEAVY CHAIN:

Position 5: Q for V

Position 9: N for A

Position 11: L for V

30 Position 12: A for R

Position 18: M for V

Position 19: K for R

Position 20: M for V

Position 40: R for A

35 Position 42: D for G

## LIGHT CHAIN:

Position 39: R for K

Position 40: T for P

Position 41: H for G

5 Position 42: E for Q

11.- Single chain Fv fragment derived from the murine 14F7 monoclonal antibody produced by the hybridoma with deposit number ECACC 98101901 according to claim 5, characterized by containing the sequence of the variable region of the heavy chain of the

10 14F7 monoclonal antibody and a light chain variable region whose sequence is as follows:

## Fr1

D I V M F Q S P A S L A V S L G Q R A T I S C

## CDR1

R A S Q S V S S S S Y S Y M H

15 Fr2

W Y Q Q K P G Q P P K L L I K

## CDR2

Y A S N L E S

## Fr3

20 G V P A R F S G S G S G T D F T L N I H P V E E E D A A T Y Y C

## CDR3

Q H S R D V P L T F

## Fr4

G A G T K L E I K

25 12.- Single chain Fv fragment derived from the murine 14F7 monoclonal antibody produced by the hybridoma with deposit number ECACC 98101901 according to claim 5, characterized by containing the sequence of the variable region of the heavy chain of the murine 14F7 monoclonal antibody and a light chain variable region whose sequence is the following:

30

## Fr1

D I Q M T Q T P S S L S A S L G D R V T I S C

**CDR1****R A S Q D I S N Y L N****Fr 2****W Y Q Q K P D G T V K L L I V**5 **CDR 2****Y T S R L H S****Fr 3****G V P S R F S G S G S G T D Y S L T I S N L E Q E D I A T Y F C****CDR 3**10 **Q Q G N T L P P T F****Fr 4****G A G T K L E L K**

13.- Single chain Fv fragment derived from the murine 14F7 monoclonal antibody produced by the hybridoma with deposit number ECACC 98101901 characterized by containing the sequence of the variable region of the heavy chain of the murine 14F7 monoclonal antibody and a light chain variable region of a human antibody

14.- Single chain Fv fragment according to claim 13, characterized by containing the sequence of the variable region of the heavy chain of the murine 14F7 monoclonal antibody and a light chain variable region whose sequence is the following:

**Fr1****D I Q M T Q T P S S L S A S V G D R V T I T C****CDR 1**25 **R A S Q S I S S F L N****Fr 2****W Y Q Q K P G K A P K L L I Y****CDR 2****A A S N L Q S**30 **Fr 3****G V P S R F S G R G S G T D F T L T I S S L Q P E D F A A Y Y C**

**CDR 3****Q Q G Y T T P L T F****Fr 4****G Q G T K L E L K**

- 5 15.- Single chain Fv fragment according to claim 13, characterized by containing the sequence of the variable region of the heavy chain of the murine 14F7 monoclonal antibody and a light chain variable region whose sequence is the following:

**Fr1****Q S V V T Q P P S A S G G P G Q S L T I S C**

10

**CDR 1****T G T S S D V G G Y N H V S****Fr 2****W Y Q Q H P G K A P K L M I Y**

15

**CDR 2****D V S K R P S****Fr 3****G V P H R F S G S K S G N T A S L T V S G L Q A E D E A V Y Y C****CDR 3****S S Y A G S N N L V F**

20

**Fr 4****G G G T K V T V L**

- 16.- Single chain Fv fragment according to claim 13, characterized by containing the sequence of the variable region of the heavy chain of the murine 14F7 monoclonal antibody and a light chain variable region whose sequence is the following:
- 25

**Fr1****S S E L T Q D P A V S V A L G Q T V R I T C****CDR 1****Q G D S L R S Y Y A S**

30

**Fr 2**

**W Y Q Q K P G Q A P V L V I Y**

**CDR 2**

**G K N N R P S**

**5 Fr 3**

**G I P D R F S G S S S G N T A S L T I T G A Q A E D E A D Y Y C**

**CDR 3**

**N S R D S S G N H V V F**

**Fr 4**

**G G G T K L T V L**

**10**

17.- Cell line characterized by expressing the recombinant antibody of any of the claims 1 to 4.

**15**

18.- Cell line characterized by expression the single chain Fv fragment of any of the claims from 5 to 16.

19.- Pharmaceutical composition for the treatment of malignant tumors characterized by comprising the recombinant antibody of any of the claims from 1 to 4.

**20**

20.- Pharmaceutical composition for the treatment of malignant tumors characterized by comprising the single chain Fv fragment of any of the claims from 5 to 16, and an appropriate excipient.

**25**

21.- Use of the pharmaceutical composition of claim 19 for the treatment of malignant breast tumors and melanomas and their metastases and recurrences.

22.- Use of the pharmaceutical composition of claim 20 for the treatment of malignant breast tumors and melanomas and their metastases and recurrences.

**30**

23.- Reagent for the "in vivo" localization and identification of malignant tumors characterized by comprising the recombinant antibody of any of the claims from 1 to 4 and an appropriate marker.

24.- Reagent according to claim 23 characterized for being used for the "in vivo" localization and identification of malignant breast tumors and melanomas their metastases and recurrences.

5 25.- Reagent for the "in vivo" localization and identification of malignant tumors characterized by comprising the single chain Fv fragment of any of the claims from 5 to 16 and an appropriate marker.

10 26.- Reagent according to claim 25 characterized for being used for the "in vivo" localization and identification of malignant breast tumors and melanomas their metastases and recurrences.